REMARKS

Status of the Claims

Claims 16-37 are currently pending in the application. Claims 1-15 stand rejected. The Examiner objects to claim 15. Claims and have been cancelled herein without prejudice or disclaimer. New claims 16-37 are presented herein. No new matter has been added by way of the present amendments. Specifically, new claims 16-37 are supported by the original claims 1-15, and the specification. Reconsideration is respectfully requested.

Amendments to the Specification

Amendments are made to the specification herein. The amendments are directed at correcting a misspelling of the word tiamutine, which is correctly spelled tiamutin. Thus, no new matter is entered into the specification by way of these amendments.

Information Disclosure Statement

The Examiner states that the Information Disclosure Statement (IDS) of January 24, 2005 failed to comply with 37 C.F.R. § 1.98(a)(2), which requires a legible copy of each cited foreign patent document. As this is a PCT national stage application filed under 35 U.S.C. 371 copies of the references cited in the International Search Report and listed in the PTO Form SB/08 of January 24, 2005 should have been forwarded to the USPTO by WIPO. However, for the Examiner's convenience Applicants submit concurrently herewith legible English language copies of all five references cited in the International Search Report of April 4, 2003 for the Examiner's consideration. Thus, reconsideration of all of the references of the IDS of January

24, 2005 is respectfully requested. A new form PTO-SB-08 is attached hereto for the Examiner's signature.

Objections to the Claims

The Examiner objects to claim 15. (*See*, Office Action of September 7, 2006, at page 2, hereinafter, "Office Action"). The Examiner states that this claim is in improper form under 37 C.F.R. § 1.75(c) as reciting an improper multiple dependency. Claim 15 has been cancelled herein without prejudice or disclaimer, thus obviating the objection.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1 and 8-15 stand rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. (*See*, Office Action, at page 2). Claims 1 and 8-15 have been cancelled herein without prejudice or disclaimer, thus obviating the rejections. New claims 16-37 are believed to adequately address the Examiner's concerns regarding insufficient positively recited steps involved in the method or process. New claims 16-37 are directed to methods and product-by-process claims which include various positive method steps needed to carry out the method.

Rejections Under 35 U.S.C. § 101

Claims 1 and 8-15 stand rejected under 35 U.S.C. § 101 because the claims recite a use, without setting forth any steps involved in the process. (*See*, Office Action, at page 3). Claims 1 and 8-15 have been cancelled herein without prejudice or disclaimer, thus obviating the rejection

as to these claims. Furthermore, new claims 16-37 are believed to be in full compliance of 35 U.S.C. § 101 because they recite specific steps, and not "uses" without further defining a method of use.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 9-11, 13 and 14 stand rejected under 35 U.S.C. § 112, first paragraph, for failing to comply with the enablement requirement. (*See*, Office Action, at page 3). Claims 9-11, 13 and 14 have been cancelled herein without prejudice or disclaimer, thus obviating the rejection as to these claims.

However, Applicants provide the following comments and guidance regarding new claims 16-37 in an effort to further prosecution and to address any possible enablement issues that may arise with respect to these new claims.

The Examiner admits that the specification does provide sufficient enablement for the treatment of Mycoplasma infections and coccidiosis in poultry using an effective amount of fermented wheat germ extract. However, the Examiner also states that the specification does not provide sufficient enablement for the prevention of any of these diseases. The Examiner further states that obtaining allowable subject matter directed to the "prevention" of a disease or dysfunction, meaning the absolute eradication of any symptoms and occurrences, requires a higher burden of proof in the specification. The Examiner states that it is accepted in the art that most afflictions/disorders cannot be completely prevented unless using a vaccine, and that the prior art reports that *Mycoplasma* infections are not entirely preventable.

It is noted that none of new claims 16-37 are directed specifically to the prevention of infections in animals. However, method claims 22 and 23, and those claims depending therefrom, do encompass decreasing the likelihood of infection. Applicants assure the Examiner that this is fully supported by the specification, as follows.

The as-filed specification demonstrates that the fermented wheat germ extract is able to actually protect at least birds from Mycoplasma infections, for example, from *M. gallisepticum* infection. Specifically, the experimental data of Example 6 discloses that in the groups treated with fermented wheat germ extract (hereinafter FWGE) or tiamutin (also commonly known as tiamulin), the chickens remained clinically healthy. The rate of Mycoplasma re-isolation and detection of serological response were both very low in the FWGE-only treated group. These parameters were similar to the tiamutin-treated group. (*See*, specification at, for instance, page 20, lines 4-7).

These findings clearly demonstrate that FWGE is effective to protect against *M. gallisepticum* infection, and is similar in effectiveness to the well-known antimycoplasma drug, tiamutin. (*See*, Jordan, F.T.W., S. Gilbert, D.L. Knight, and C.A. Ivary, 1989, *Effects of Baytril, tylosin and tiamulin on avian mycoplasmas*, Avian. Pathol., 18:659-673). Furthermore, *M. gallisepticum* infection is widespread throughout the world and FWGE could be used to reduce the economic losses caused by mycoplasma infection. As discussed in the present specification, this is especially relevant as the agriculture industry seeks to reduce the use of antibiotics. (*See*, specification, at page 3, lines 5-13).

As additional evidence of the effectiveness of the presently claimed invention to protect animals from infection, or at the very least decrease the likelihood of infection, the present

specification also discloses the ability of the presently claimed FWGE to protect pigs against pneumonia caused by *M. hyopneumoniae*. (*See*, specification, at page 3, lines 13-16). Thus, the presently claimed invention is fully and adequately supported by the as-filed specification and enables one of ordinary skill in the art to actually decrease the likelihood of infection, as empirically proven in the specification.

Furthermore, the experimental data of Example 7 discloses that cocciodosis caused by *Eimeira tenella* could not develop in the chickens treated with FWGE. On the 7th day, only a few oocysts were isolated from the faeces of the chickens infected by *E. tenella* sporulated oocysts. In addition, contrary to the common side effects of infection, significant body weight gain was registered in the infected group consuming FWGE compared to the normally fed control group. (*See*, specification, at page 21, Table 7 and lines 3-12).

Moreover, the experimental data of Example 1 demonstrates that FWGE is able to decrease the likelihood of bacterial infections to the same extent that enrofloxacine is able to also prevent these infections in chickens. Group I is not administered enrofloxacine (a commonly used antibacterial drug). This is in contrast to the group II and the control group K which both received enrofloxacine. Despite this fact, significant body weight gain could be achieved in group I, similar to that observed in group II. (*See*, specification, at Table 1 on page 8). Consequently, a double effect was observed in group I, *i.e.* prevention of infection AND gain in body weight.

Therefore, Applicants submit that the as-filed specification indeed provides overwhelming objective evidence of the ability of the presently claimed methods and compositions to prevent, or at the very least, decrease the likelihood of, infectious inflammation.

Rejections Under 35 U.S.C. § 102(b)

Claims 1 and 8-14 rejected under 35 U.S.C. § 102(b) as being anticipated by Hidvegi et al., WO 99/08694 (hereinafter, "Hidvegi et al."). (*See*, Office Action, beginning at the bottom of page 4). Claims 1 and 8-14 have been cancelled herein without prejudice or disclaimer, thus obviating the rejection as to these claims.

However, to the extent that the cited references may apply to new claims 16-37, Applicants provide the following comments.

The Examiner states that Hidvegi et al. disclose a fermented wheat germ extract obtained by fermenting wheat germ with yeast, similar to that recited in the present claims.

The present method claims are directed to enhancing weight gain or treating disease, and comprise substantially the following steps:

- preparing fermented wheat germ extract from fermented liquid and biomass obtained by fermenting wheat germ in an aqueous medium,

- adding the fermented wheat germ extract to a fodder in an amount 0.1 to 6.0 g/kg fodder, and

- feeding this fodder to an animal.

In contrast to the presently claimed method, the known fermented vegetal material disclosed in Hidvegi et al. is obtained exclusively from fermented liquid, not liquid plus biomass.

(*See*, Hidvegi et al., at, for instance, claim 5). Hidvegi et al. specifically state that their invention "concerns an immunostimulatory and metastasis inhibiting fermented and dried vegetal material which is obtainable by fermenting wheat germ with baker's yeast in an aqueous medium filtering the fermented liquid cell free and drying it." (*Id.* at page 2, lines 28-30). However, the extract used in the present invention is a homogenized mixture in 1:1 rate of dried liquid and biomass. (*See*, specification, Preparation of fraction 1, 2 and final product, at page 6, line 14 to page 7, line 4). Therefore, the presently claim extract and methods are not the same as those disclosed in Hidevgi et al.

Additionally, Applicants point out that there is a clear structural difference between the extract of Hidvegi et al. and that of the presently claimed invention. Specifically, the 2,6-DMBQ (2,6-dimethoxy-*p*-benzoquinone) content, which is a marker of the product, is lower in the extract of the present invention compared to that disclosed in Hidvegi et al. The 2,6-DMBQ-content of the Hidvegi et al. product is 0.4 mg/g. (*See*, for instance, claim 4 of Hidvegi et al.). In contrast, the presently claimed composition has a 2,6-DMBQ-content of 0.11 mg/g.

Furthermore, the biomass used in the presently claimed methods and compositions provides better and new properties to the extract. The biomass, comprising the useful components of yeast cells (*e.g.* amino acids, vitamins, microelements) renders a better milieu to the intestinal flora of the animals to which it is fed. Because of this better milieu, the fodder components that are normally hard to absorb by animals are better absorbed. Therefore, the fodder is better utilized, leading to a better feed conversion ratio using the presently claimed invention.

Additionally, without wishing to be bound by any specific theory, it is thought that at the same time, the better intestinal flora properties provided by the biomass also benefits the condition of the immune system, leading to a reduction in veterinary problems and/or elimination of such problems (such as infection and low body mass). The experimental data disclosed in the present specification, referring to body weight enhancement, is also significantly better than that previously disclosed by any other reference, such as Hidvegi et al., which is likely attributable to the presence of the biomass in the presently claimed compositions and methods. All these unique beneficial effects evidence the novel and unexpected synergistic activity of the two components of the product used in the presently claimed invention.

Rejections Under 35 U.S.C. § 103(a)

Claim 1-15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable as obvious over Hidvegi et al. (*See*, Office Action, at page 5). Claims 1 and 8-14 have been cancelled herein without prejudice or disclaimer, thus obviating the rejection as to these claims.

Although the Examiner has not yet considered new claims 16-37, in an effort to expedite prosecution, and to the extent that new claims 16-37 are directed to subject matter similar to cancelled claims 1-15, Applicants provide the following comments regarding the cited reference and the presently pending claims.

The Examiner states that although Hidvegi et al. do not disclose adding the fermented wheat germ extract to fodder, the reference discloses or suggests that this extract is therapeutically useful as an immunostimulatory agent when administered to animals and that one

of ordinary skill in the art would have thought it obvious to then add the extract to feed or fodder to gain the benefit of the extract.

In addition to the differences between the Hidvegi et al. composition and the presently claimed methods and compositions explained, above, with respect to the anticipation rejection, there are differences in the disclosures and motivations behind the two compositions and methods. For instance, Hidvegi et al. is directed to finding an immunostimulatory and metastasis-inhibiting material. (*See*, Hidvegi et al., at for instance, claim 1). The inhibitory effect of the Hidvegi et al. composition on tumor growth and metastasis growth would not necessarily motivate one of ordinary skill in the art to consider a similar extract for the unrelated purpose of improving animal feeding and veterinary health (related to infection) as indicated in the present application. Thus, these benefits of the presently claimed methods and products are not directed to solving the same problems to which the Hidvegi et al. reference are directed.

Furthermore, Hidvegi et al. do not disclose nor even suggest to one of ordinary skill in the art that the most effective antibiotics currently in use today in veterinary care could be substituted by a natural product as presently disclosed, and empirically proven, in the present specification. (*See*, for example, specification, at Example 1, comparing enrofloxacine to the presently claimed methods and compositions, and Example 6, comparing tiamutin with the presently claimed methods and compositions).

Additionally, the present specification discloses that the observed body weight gain that occurs upon feeding of the presently claimed compositions is unexpectedly not solely due to or related to the immunostimulatory effect of the FWGE. Rather, FWGE has a *per se* body weight enhancing effect on animals. Specifically, it is disclosed in the present specification that the

body weight of a chicken is increased not only due to maintaining consistent health. It is disclosed in the present specification that there is even a difference between the body weight gain of two healthy chickens, one fed "normal" fodder, the other being fed using the presently claimed compositions and methods, proving the additional beneficial effects of the FWGE found in the present compositions and methods. This unexpected result is not disclosed or suggested in Hidvegi et al.

These assertions are fully supported in the specification. For instance, the experiments described in Example 1, wherein two experimental groups I and II and the control group K were investigated, as previously discussed, above. Groups II and K were administered enrofloxacine to prevent bacterial infections. Group I was not administered enrofloxacine. Consequently, the chickens of groups II and K were protected from the beginning of the experiment. Thus, the important body weight gain (by 5.22 %) in group II is not related to the protection against diseases, but rather directly related to the beneficial body weight enhancing effect of the presently claimed FWGE compositions. (*See*, specification, at Example 1 and Table 1).

Therefore, Applicants believe that the body weight enhancing effects and the protecting effects against infectious inflammations, as recited in new claims 16-36, are neither disclosed nor suggested in Hidvegi et al.

Thus, because Hidvegi et al. do not disclose or suggest each and every limitation of the presently claimed invention, and because Hidvegi et al. provides no motivation for one of ordinary skill in the art to modify the compositions of Hidvegi et al. to arrive at the presently claimed compositions and methods, and because the presently claimed invention achieves unexpected results, as demonstrated by the experiments and data disclosed in the specification,

the Examiner cannot establish a *prima facie* case of obviousness with respect to new claims 16-36 either in light of Hidvegi et al., or in light of Hidvegi et al. combined with any other reference or the knowledge of one of ordinary skill in the art.

CONCLUSION

In view of the above amendments and comments, Applicants believe the present pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Thomas J. Siepmann, Ph.D., Reg. No. 57,374, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: DEC 0 7 2006

Respectfully submitted,

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